

collodion film to guide on a point on the surface of the Moon, and by guiding on it to allow for the motion of the Moon.

When the photographic chart of the sky was begun Cornu was one of the delegates appointed by the Académie des Sciences, and he was an active member of the various astrographic congresses.

The memoirs which Cornu contributed to the Académie des Sciences are models of clear exposition. His lectures and addresses were equally marked for their lucidity and admirable style. In England he lectured on several occasions at the Royal Institution, and in 1899 he gave the Rede lecture at Cambridge on the wave theory of light.

The importance of his scientific work was appreciated both in France and in foreign countries. In 1878 he received the Lacaze prize of the Académie des Sciences and the Rumford Medal of the Royal Society. In 1896 he was President of the Académie des Sciences. In 1886 he was appointed to the Bureau des Longitudes. In England he was elected a foreign member of the Royal Society in 1884; the degree of Hon. Sc. D. was conferred on him at Cambridge in 1899. He was elected an Associate of the Royal Astronomical Society in 1890.

M. Cornu continued to discharge his duties at the École Polytechnique, and was engaged in his usual scientific work till Easter. He left Paris soon afterwards, apparently in the best of health, to spend a short vacation at Orleans. He died on the 12th of April, after a very short illness.

M. Cornu had many friends in England as well as in France, who will feel that his death is a personal no less than a scientific loss.

HERVÉ FAYE was born on the 1st of October 1814. He entered the École Polytechnique in 1832, and in 1836 became an assistant at the Paris Observatory. In 1844 he received the Lalande Prize of the Academy for his discovery of a comet and his subsequent researches on it. In 1847 he became a Member of the Institute, and was shortly afterwards appointed lecturer on Geodesy at the École Polytechnique. In 1854 he became Rector of the Academy and Professor of Astronomy at Nancy. In 1862 he succeeded Biot at the Bureau des Longitudes. In 1870 he was chosen as Inspector-General of Secondary Scientific Education, and in 1874 returned to the École Polytechnique as Professor of Astronomy and Geodesy. He was for a time Minister of Public Instruction.

From 1878-1888 he was Inspector-General of Higher Education.

Faye's discovery of the comet which bears his name was made on the 22nd of November 1843, and communicated to the Academy of Sciences. It was followed on the 6th of December by a communication of the elements of the parabolic orbit obtained from observations made on the 24th and 29th of

November and the 2nd of December. He soon found that the comet was moving in an elliptic orbit, and proceeded to calculate one by the methods given by Gauss in the *Theoria Motus*. He was anticipated in this by Goldschmidt, but it is of interest to observe that this was the first comet for which an elliptic orbit was computed from observations extending over a comparatively short period. From observations extending over 48 days Faye found a period of 7.2 years and an eccentricity of about one-half.

His interest in comets led him to compute an elliptic orbit for D'Arrest's Comet in 1844, and for De Vico's Comet, which Faye also discovered independently, in the following year. Of the 302 papers which appear under his name in the Royal Society *Catalogue* as being written between 1843 and 1883 a considerable number relate to comets, especially to the forms of the tails and to the evidence which can be deduced as to the existence of a resisting medium. In the former connection he studied Donati's Comet and in the latter that of Encke. He considered that the phenomena of comets' tails were to be accounted for by a repulsive force due to the Sun's heat.

A number of Faye's earlier memoirs relate to the details of meridian observations, such as the division errors of the Circle of Gambey and the discordances found between direct observations of zenith distance and those made by reflexion from mercury. He has several papers on absolute declinations and the systematic errors of the earlier catalogues of last century.

Faye was attracted by the problems of solar physics. It cannot be said that he made observations like those of Carrington or the spectroscopic discoveries which have enriched this field of astronomical research during the last half-century, but it was to him we owe the first exposition of a theory of the Sun's constitution which is in its general outlines accepted at the present time.

Herschel's theory of the Sun as a cool, dark, habitable globe was generally held till the middle of last century, and Miss Clerke in her *History of Astronomy* gives a reference to a treatise upholding this view as late as 1866. Faye, in January 1865, communicated to the Academy of Sciences a memoir in which he advanced the view that the Sun is to be regarded as a heat-engine, designed to radiate heat from its surface. "Le foyer est la masse même de l'astre, dotée, dès l'origine, d'une prodigieuse quantité de calorique que la contraction progressive de la masse entière contribue à alimenter. La source de froid est l'espace céleste. Le condensateur, c'est la photosphère. Le moyen de régularisation, c'est l'invariabilité naturelle de la température à laquelle se produisent les combinaisons chimiques, et de celle où elles se détruisent. Le jeu de la machine consiste en courants ascendants et descendants, les uns charriant des vapeurs, les autres des substances solides et refroidies. Le moyen de transport de la chaleur, du centre à la superficie, consiste en ce que ces substances solides ou oxydées emprun-

tent aux couches centrales, pour se dissocier, une quantité que leurs vapeurs reportent plus haut, dans la photosphère, ou reproduisent en se combinant." *

Faye is perhaps best known for his daring attempt to supersede Laplace's explanation of the formation of the planetary system. His views are expounded in the *Comptes Rendus*, vol. xc., in the *Annuaire pour l'An 1885, Bureau des Longitudes*, and in his essay *Sur l'Origine du Monde*. An account of Faye's theory and a critical estimate of its value is given by Professor G. H. Darwin in *Nature* for the 2nd of April 1885. Faye contended that if Laplace's nebular hypothesis were correct the satellites, not only of *Uranus* and *Neptune*, but of all the planets would have a retrograde motion. He met this difficulty by assuming evolution from meteorites rather than nebulous matter, and by the aggregation of the inner planets in the midst of these meteorites before their masses were mainly condensed in a central Sun.

"On the whole," Professor Darwin concludes, "we must hold the opinion that there are great difficulties in the acceptance of M. Faye's theory, notwithstanding its excellences. The time does not appear yet ripe for definite judgment on this very complex subject, but science is undoubtedly the gainer by such suggestive theories. Whilst a false statement of fact always proves a serious detriment, the enunciation of false or partially true theories is always the incentive to, or initiation of, the discovery of truth."

In addition to many Academic distinctions Faye received the Grand Cross of the Legion of Honour, in recognition of his numerous services to the Government. His scientific labours were acknowledged and appreciated by learned societies in Europe and America, who enrolled him among their members. He has been an Associate of our Society since 1848, and it is of interest to note that he was elected on the same day as Professor Galle of Berlin and Dr. Otto Struve. These names carry us back a long way in the history of Astronomy, our next oldest Associates being Dr. Arthur Auwers and Dr. Wilhelm Förster, who were elected in 1866, eighteen years later.

M. Faye died on the 4th of July, at the age of 87, his death being followed a few months later by that of Madame Faye.

* *L'Origine du Monde*, p. 237.